# Claims

[c1] An optical wireless communication device for performing communication by laser light, comprising:
a primary light-emitting unit operable to emit a first laser light; and
a processing unit operable to adjust divergence of said first laser light based upon a predetermined condition of the optical wireless communication device to optimize the communication performed by said first laser light.

[c2] An optical wireless communication device as claimed in claim 1, further comprising a measurement unit operable to measure a distance of separation of the optical wireless communication device from an object which is irradiated with said first laser light, wherein
said processing unit adjusts said divergence of said first laser light based on said measured distance as said predetermined condition of the optical wireless communication device.

[c3] An optical wireless communication device as claimed in claim 2, further comprising a secondary light-emitting unit operable to emit a second laser light having an optical axis approximately parallel to an optical axis of said first laser light, wherein
said measurement unit measures said distance by irradiating said object with said second laser light.

[c4] An optical wireless communication device as claimed in claim 3, further comprising a detecting unit operable to detect an irradiated position of said object, which is irradiated with said second laser light, from a position that is different from a corresponding position of said secondary light-emitting unit, wherein
said measurement unit measures said distance based on said irradiated position of said object detected by said detecting unit.

[c5] An optical wireless communication device as claimed in claim 3, further comprising a light-receiving unit operable to receive said second laser light after reflection from said object, wherein
said measurement unit measures said distance based on a light-emission time

at which said secondary light-emitting unit emitted said second laser light and a light-received time at which said light-receiving unit received said second laser light.

[c6] An optical wireless communication device as claimed in claim 3, further comprising a light-emission control unit operable to prohibit light emission by said primary light-emitting unit in a case where said secondary light-emitting unit emits said second laser light.

[c7] An optical wireless communication device as claimed in claim 3, wherein said second laser light emitted by the secondary light-emitting unit has a higher output power than an output power of said first laser light emitted by said primary light-emitting unit.

[c8] An optical wireless communication device as claimed in claim 3, wherein said primary light-emitting unit has a switching rate higher than a switching rate of said secondary light-emitting unit.

[c9] An optical wireless communication device as claimed in claim 3, wherein said primary light-emitting unit has a higher operational durability than said secondary light-emitting unit.

[c10] An optical wireless communication device as claimed in claim 1, further comprising a measurement unit operable to measure a distance of separation of the optical wireless communication device from an object which is irradiated with said first laser light, wherein
said processing unit adjusts said divergence of said first laser light based on previously stored divergence data that corresponds to said measured distance as said predetermined condition of the optical wireless communication device.

[c11] An optical wireless communication device as claimed in claim 1, further comprising a measurement unit operable to measure a distance of separation of the optical wireless communication device from an object which is irradiated with said first laser light, and
a memory unit operable to store at least said distance of separation as said predetermined condition of the optical wireless communication device and at

least divergence data to correspond with said distance of separation, wherein said processing unit adjusts said divergence of said first laser light based on previously stored said divergence data.

[c12] An optical wireless communication device as claimed in claim 1, further comprising a memory unit operable to store at least a distance of separation of the optical wireless communication device from an object which is irradiated with said first laser light as said predetermined condition of the optical wireless communication device and at least divergence data to correspond with said distance of separation, wherein
said processing unit adjusts said divergence of said first laser light based on previously stored said divergence data to adjust a transmission range of said first laser light.

[c13] An optical wireless communication device as claimed in claim 1, wherein said predetermined condition of the optical wireless communication device is a distance of separation of the optical wireless communication device from a receiving device which is irradiated with said first laser light, and the optical wireless communication device further comprising
divergence data corresponding to said distance of separation, said divergence data optimizing communication performed by said first laser light with said receiving device when the optical wireless communication device is separated from said receiving device by said distance of separation, wherein
said processing unit adjusts said divergence of said first laser light based on previously stored said divergence data to adjust a transmission range of said first laser light.

[c14] An optical wireless communication device for performing communication by using laser light, comprising:
a light-emitting unit operable to emit laser light;
a measurement unit operable to measure a distance to an object which is to be irradiated with said laser light; and
a processing unit operable to adjust an output power of said laser light based on said measured distance.

[c15] A method of adjusting laser light, for use in an optical wireless communication device that performs communication by using said laser light, the laser light adjustment method comprising:
emitting said laser light; and
adjusting divergence of said laser light based upon a predetermined condition of the optical wireless communication device.

[c16] A laser light adjustment method as claimed in claim 15, further comprising measuring a distance to an object which is to be irradiated with said laser light, wherein
said divergence of said laser light is adjusted based on said measured distance as said predetermined condition of the optical wireless communication device.

[c17] A method of adjusting laser light, for use in an optical wireless communication that performs communication by using said laser light, the laser light adjustment method comprising:
emitting said laser light;
measuring a distance to an object which is to be irradiated with said laser light; and
adjusting an output power of said laser light based on said measured distance.

[c18] An optical wireless communication device for performing communication by using light, comprising:
a light-receiving unit operable to receive said light; and
an information unit operable to issue a notification indicative of a quality of said light received by said light-receiving unit.

[c19] An optical wireless communication device as claimed in claim 18, wherein said light is laser light,
said light-receiving unit receives said laser light, and
said information unit issues said notification indicative of a quality of said laser light received by said light-receiving unit.

[c20] An optical wireless communication device as claimed in claim 18, wherein said light is infrared light,

said light-receiving unit receives said infrared light, and
said information unit issues said notification indicative of a quality of said infrared light received by said light-receiving unit.

[c21] An optical wireless communication device as claimed in claim 18, wherein said quality of said light is an averaged input power of said light in a predetermined time period.

[c22] An optical wireless communication device as claimed in claim 18, wherein said information unit includes an indicator operable to emit light as said notification indicative of a quality of said light, and
a light-emission control unit is further provided to control the emission by said indicator based on said quality of said light received by said light-receiving unit.

[c23] An optical wireless communication device as claimed in claim 22, wherein said light-emission control unit controls an on-off period during which said emission of light by said indicator goes on and off based on said quality of said light received by said light-receiving unit.

[c24] An optical wireless communication device as claimed in claim 22, wherein said light-emission control unit controls an output power of said light emitted by said indicator based on said quality of said light received by said light-receiving unit.

[c25] An optical wireless communication device as claimed in claim 22, wherein said indicator includes a plurality of light-emitting elements, and
said light-emission control unit controls which one or more of said plurality of light-emitting elements emits light based on said quality of said light received by said light-receiving unit.

[c26] An optical wireless communication device for performing optical communication, comprising:
a light-receiving unit operable to receive light and to convert said received light into an electric signal;
an output unit operable to output said converted electric signal as an outputted signal;

an input unit operable to receive another electric signal as an inputted signal;
a selector operable to select one of said another electric signal received by said input unit and said converted electric signal, and to output said selected electric signal; and
a light-emitting unit operable to convert said selected electric signal into light and to output said converted light.

[c27] An optical wireless communication system comprising a first optical wireless communication device and a second optical wireless communication device that perform optical communication and a management apparatus that manages said optical communication between said first and second optical wireless communication devices, wherein said first optical wireless communication device comprises:
a first light-receiving unit operable to receive light sent from said second optical wireless communication device and to convert said received light into an electric signal;
a first output unit operable to output said converted electric signal to said management apparatus;
a first input unit operable to receive an electric signal from said management apparatus; and
a first light-emitting unit operable to convert said received electric signal into light and to send said converted light to said second optical wireless communication device, and
wherein said second optical wireless communication device comprises:
a second light-receiving unit operable to receive said light sent from said first optical wireless communication device and to convert said light into an electric signal; and
a second light-emitting unit operable to convert said electric signal of said second light-receiving unit into light and to send said light converted by said second light-emitting unit to said first optical wireless communication device.

[c28] An optical wireless communication system as claimed in claim 27, wherein said management apparatus includes:
an electric signal generate unit operable to generate an electric signal to be

output to said first optical wireless communication device;
a transmit unit operable to transmit said electric signal generated by said electric signal generate unit to said first optical wireless communication device;
a receive unit operable to receive said converted electric signal output from said first optical wireless communication device; and
a compare unit operable to compare said electric signal transmitted from said transmit unit with said converted electric signal received by said receive unit.

[c29] An optical wireless communication system as claimed in claim 28, wherein said management apparatus further includes a diagnostic unit operable to determine whether or not said optical communication between said first and second optical wireless communication devices is performed normally, based on a result of the comparison by said compare unit.

[c30] An optical wireless communication system as claimed in claim 29, wherein said diagnostic unit determines that said optical communication between said first and second optical wireless communication devices is not performed normally when said electric signal transmitted from said transmit unit is different from said converted electric signal received by said receive unit, and
said management apparatus further includes a processing unit operable to adjust divergence of light sent from said first light-emitting unit of said first optical wireless communication device when said diagnostic unit determines that said optical communication between said first and second optical wireless communication devices is not performed normally.

[c31] An optical wireless communication system as claimed in claim 29, wherein said diagnostic unit determines that said optical communication between said first and second optical wireless communication devices is not performed normally when said electric signal transmitted from said transmit unit is different from said converted electric signal received by said receive unit, and
said management apparatus further includes a processing unit operable to adjust an output power of light sent from said first light-emitting unit of said first optical wireless communication device when said diagnostic unit determines that said optical communication between said first and second

optical wireless communication devices is not performed normally.

[c32] An optical wireless communication system as claimed in claim 27, wherein said second optical wireless communication device further includes:
a second input unit operable to receive an inputted electric signal; and
a selector operable to select one of said inputted electric signal received by said second input unit and said electric signal converted by said second light-receiving unit, and to supply said selected electric signal, and wherein
said second light-emitting unit converts said selected electric signal supplied from said selector into light and sends said converted light thus obtained to said first optical wireless communication device.

[c33] An optical wireless communication system as claimed in claim 32, wherein said second optical wireless communication device further includes a mode select unit operable to select one of operation modes of said second optical wireless communication device, said operation modes including a communication mode, in which said optical communication is performed between said first and second optical wireless communication devices, and a test mode, in which a test for said optical communication is performed, and
said selector selects said electric signal converted by said second light-receiving unit when said test mode is set in said second optical wireless communication device by said mode select unit.

[c34] A management apparatus for managing optical communication between a first optical wireless communication device and a second optical wireless communication device, comprising:
an electric signal generate unit operable to generate a first electric signal;
a transmit unit operable to transmit said first electric signal generated by said electric signal generate unit to said first optical wireless communication device;
a receive unit operable to receive, from said first optical wireless communication device, a second electric signal generated by converting said first electric signal generated by said electric signal generate unit into light in said first optical wireless communication device, sending said light converted in said first optical wireless communication device to said second optical wireless communication

device, in said second optical wireless communication device, converting said light received from said first optical wireless communication device into a third electric signal and then converting said third electric signal into light in said second optical wireless communication device, sending said light converted in said second optical wireless communication device to said first optical wireless communication device, and, in said first optical wireless communication device, converting said light sent from said second optical wireless communication device to said first optical wireless communication device into said second electric signal;

a compare unit operable to compare said first electric signal transmitted from said transmit unit with said second electric signal received by said receive unit; and

a diagnostic unit operable to determine whether or not said optical communication is performed normally, based on a result of the comparison by said compare unit.

[c35] A computer-readable medium storing a management program for a management apparatus that manages optical communication between a first optical wireless communication device and a second optical wireless communication device, said management program comprising:

an electric signal generate module operable to make said management apparatus generate a first electric signal;

a transmit module operable to make said management apparatus transmit said first electric signal generated by said management apparatus to said first optical wireless communication device;

a receive module operable to make said management apparatus receive, from said first optical wireless communication device, a second electric signal generated by converting said first electric signal generated by said management apparatus into light in said first optical wireless communication device, sending said light converted in said first optical wireless communication device to said second optical wireless communication device, in said second optical wireless communication device, converting said light received from said first optical wireless communication device into a third electric signal and converting said

third electric signal into light in said second optical wireless communication device, sending said light converted in said second optical wireless communication device to said first optical wireless communication device, and converting said light sent from said second optical wireless communication device to said first optical wireless communication device into said second electric signal;

a compare module operable to make said management apparatus compare said first electric signal generated by said management apparatus with said second electric signal received by said management apparatus; and

a diagnostic module operable to make said management apparatus determine whether or not said optical communication is performed normally, based on a result of the comparison by said management apparatus.